

Malfunction Indicator Lamp

- Dedicated, single lamp for all OBD faults
 - “Check Powertrain” proposed
 - open to other standardized alternatives?
- MIL cannot be used for other purposes
 - e.g., maintenance, non-emission faults...
- Manufacturers may use other lamp(s) in addition to MIL to direct operator to proper service location
 - e.g., “Check Engine” or “Check Trans”



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MIL and Fault Code Logic

- OBD requires statistical fault detection
 - first fault detection requires pending code
 - fault detection on two consecutive driving cycles requires confirmed code and MIL on
- MIL extinguished when:
 - three consecutive driving cycles occur with no fault detected (monitor runs and passes); or
 - scan tool used to clear codes
- Confirmed Codes:
 - stay in memory for 40 warm-up cycles after MIL extinguished



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Driving Cycle Definition

- Basic Definition:
 - Engine start, monitor runs once, engine shut-off
- Heavy-duty has unique operator habits
 - Engine may be running on a single start for hours, days, or even weeks at a time
- Alternate definition needed:
 - Monitors required to run only “once-per-driving cycle” would be re-enabled after four hours of continuous operation



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Roadside Inspection Integrity

- OBD system must be able to be used robustly in a roadside inspection
- Two elements used to detect drivers attempting to clear codes without repair
 - Readiness codes (identify if major monitors have run since code clear)
 - Permanent DTCs (identify if most recent MIL-on fault has run since code clear) - can only be erased by the OBD system itself, not by battery disconnect or scan tool



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OBD Performance Tracking

- In-use performance
 - Requires on-board computer to keep a count of how often each major monitor has run and could have detected a fault
 - Requires a separate counter to record how often the vehicle has been operated



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OBD Performance Tracking (cont.)

- Ratio of two counters indicates monitor frequency
 - Presently no minimum ratio or enforcement process based solely on this ratio
 - 2010 OBD regs will start using this ratio as part of the requirements (e.g., minimum ratio of 0.100)



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Engine Operation Tracking

- Requires on-board computer to log the amount of :
 - total engine operation
 - engine idle
 - operation in the NTE zone (speed/torque defined)
 - each individual AECD activated
- Only log AECDs that:
 - reduce emission control effectiveness (i.e., cause measurable increase in emissions); and
 - are not activated during emission certification testing



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OBD Communication Protocol

- Original proposal:
 - Single protocol (but undetermined as to which one)
- Revised proposal:
 - Allow use of SAE J1939 or ISO 15765
- However, must use one or the other for all required OBD communications
 - cannot use ISO 15765 protocol with J1939 connector
 - cannot have some modules on a truck use J1939 and others on the same truck use ISO 15765
- ISO 15765 restricted same as LDV
 - 500k only and max 12 Volts at connector



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